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October 16, 2008

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*Via Courier*

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

FILED/ACCEPTED

OCT 16 2008

Federal Communications Commission  
Office of the Secretary

Re: **MM Docket No. 99-325**  
**Notice of Ex Parte Meeting With FCC Staff**

Dear Ms. Dortch

On Wednesday, October 15, 2008, Albert Shuldiner, Senior Vice President and General Counsel of iBiquity Digital Corporation, Milford K. Smith, Vice President, Radio Engineering of Greater Media, Inc., and Steven A. Lerman and John W. Bagwell of Leventhal Senter and Lerman PLLC, counsel for the Joint Parties that filed a request in the above captioned docket on June 10, 2008, seeking an increase in the allowable digital operating power of FM broadcast stations, met with Peter Doyle, Chief of the Audio Division, James Bradshaw, Audio Division, Media Bureau, Steven Broeckaert, Policy Division, Media Bureau, Susan Crawford, Audio Division, Media Bureau, Ann Gallagher, Audio Division, Media Bureau, Tom Hutton, Audio Division, Media Bureau, Charles Miller, Policy Division, Media Bureau, Mary Beth Murphy, Policy Division, Media Bureau, and Brendan Murray, Policy Division, Media Bureau to discuss the Joint Parties' request and the related experimental studies that were conducted. The recently completed Digital Radio Coverage & Interference Analysis conducted by NPR Labs was also discussed. Attached is a copy of a presentation that was distributed at the meeting.

Should there be any questions regarding this matter, please contact the undersigned at 202-429-8970.

Very truly yours,

Steven A. Lerman  
*Counsel for the Joint Parties*

Attachment

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List ABCDE



Federal Communications Commission

Audio Division

October 15, 2008

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## Topics for Discussion

- ☐ Overview of iBiquity/Broadcaster Study
- ☐ Joint Parties Proposal to the FCC
- ☐ DRCIA Study
- ☐ Future Plans



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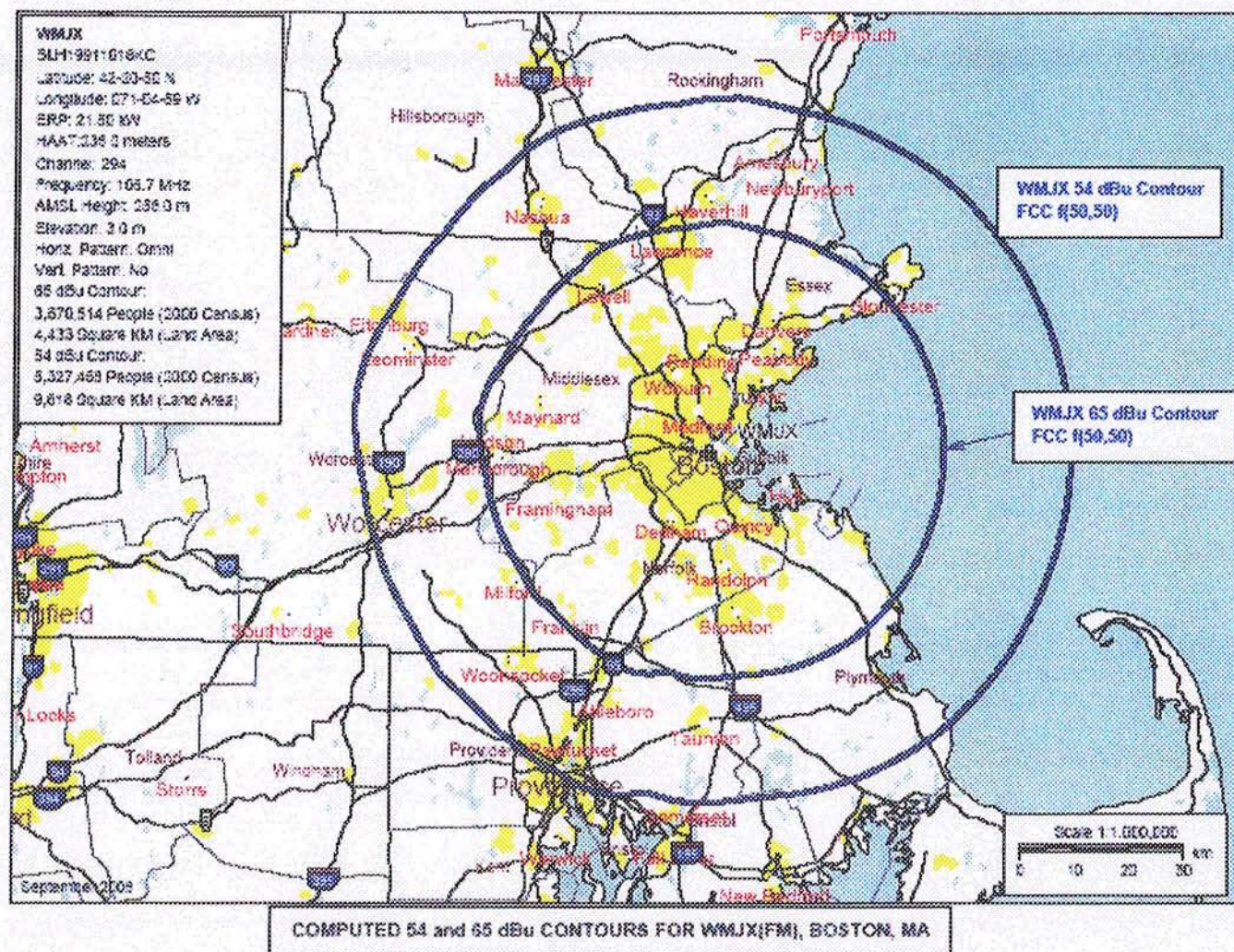
## Problems Higher Power Will Address

- ☐ In general, reliable HD Radio coverage extends to approximately the 65 dBu contour of a typical station.
- ☐ Reliable analog coverage, in most cases, extends to or beyond the 60, 57 or 54 dBu contour depending on the class of station.
- ☐ In many markets this abbreviated coverage makes in car listening over a typical commute problematic
- ☐ Building penetration at the existing -20 dB power level can be poor, especially in commercial structures
- ☐ Reception on new portable HD Radio receivers will be challenging, given the relatively small antennas used
- ☐ Coverage issues particularly important for HD2 and HD3 channels where there is no analog backup



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### Example – WMJX(FM) Boston



# iBiquity and Broadcaster High Power Study

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## Goals of High Power Study

- ☐ **Digital Performance** – goal was to test the practicality of real world HD Radio transmission at the elevated power level and ascertain the resulting digital coverage
  - **Coverage**
    - Authorized Level (-20 dB)
    - Elevated Level (-10 dB)
  - **Building Penetration**
    - Authorized Level (-20 dB)
    - Elevated Level (-10 dB)
- ☐ **Analog Compatibility** – goal was to ascertain any increase in harmful interference to first adjacent channel analog signals, especially those short spaced to the high power operation
  - Recordings made at fixed locations with current and proposed higher power
- ☐ **Subjective Analysis**
  - General population subjective evaluation of audio recordings by Salisbury University

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# Test Station Selection

Fixed & Mobile Tests	Area	HD Lic.	Desired	Desire Freq	Desired Format	Type Test	Class		Spacing	% of Mn	Short / Norm	Terrain
							HD	Des	(KM)			
Fixed & Mobile Tests	CT/NY	WKD	WPDH	101.5	Rk&Roll	Compatibility	B	B	93.18	57	Short	Hilly
			WCBS	101.1	Jack	Compatibility	B	B	115.89	71	Short	Shore
			WABB	101.5	Oldies	Compatibility	B	B	145.71	89	Short	Hilly
			WKD	101.3		Performance	B					Hilly
	Detroit	WCSX	WCEN	94.5	Country	Compatibility	B	C1	183.74	94	Normal	Flat
			WMMQ	94.9	Cl Rock	Compatibility	B	B	116.69	71	Short	Flat
			WAKR	94.5	Cl Rock	Compatibility	B	B	106.56	65	Short	Flat
			WCSX			Performance	B					Flat
	LA	KOST 103.5 MHz	KTMQ	103.3	Cl Rock	Compatibility	SB	A	116.11	88	Short	Mountain
			KSCF	103.7	Talk	Compatibility	SB	B	171.4	105	Normal	Mountain
			KVYB	103.3	Hip-Hop	Compatibility	SB	B	177.38	108	Normal	Mountain
			KOST	103.5		Performance	SB					Mountain
		KROQ	KROQ	106.7		Performance	B					Mountain

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## Notes from the Field

- ☐ Several stations operated with elevated HD Radio power levels for many months (WCSX,WKCI), some for more than a year. At least one is still operating (KROQ).
- ☐ We are not aware of any interference complaints from any first adjacent station, including those short spaced to the high power operations.
- ☐ There have been no listener complaints.
- ☐ High power operation is very practical - several implementation scenarios were identified and actually used in the test program.
- ☐ Coverage improvements were dramatic; in virtually every case analogue coverage was replicated and digital drop outs within that area were close to nonexistent.
- ☐ Actual observed increased interference to first adjacent channel stations was minimal and fell largely outside of the stations' protected contours.



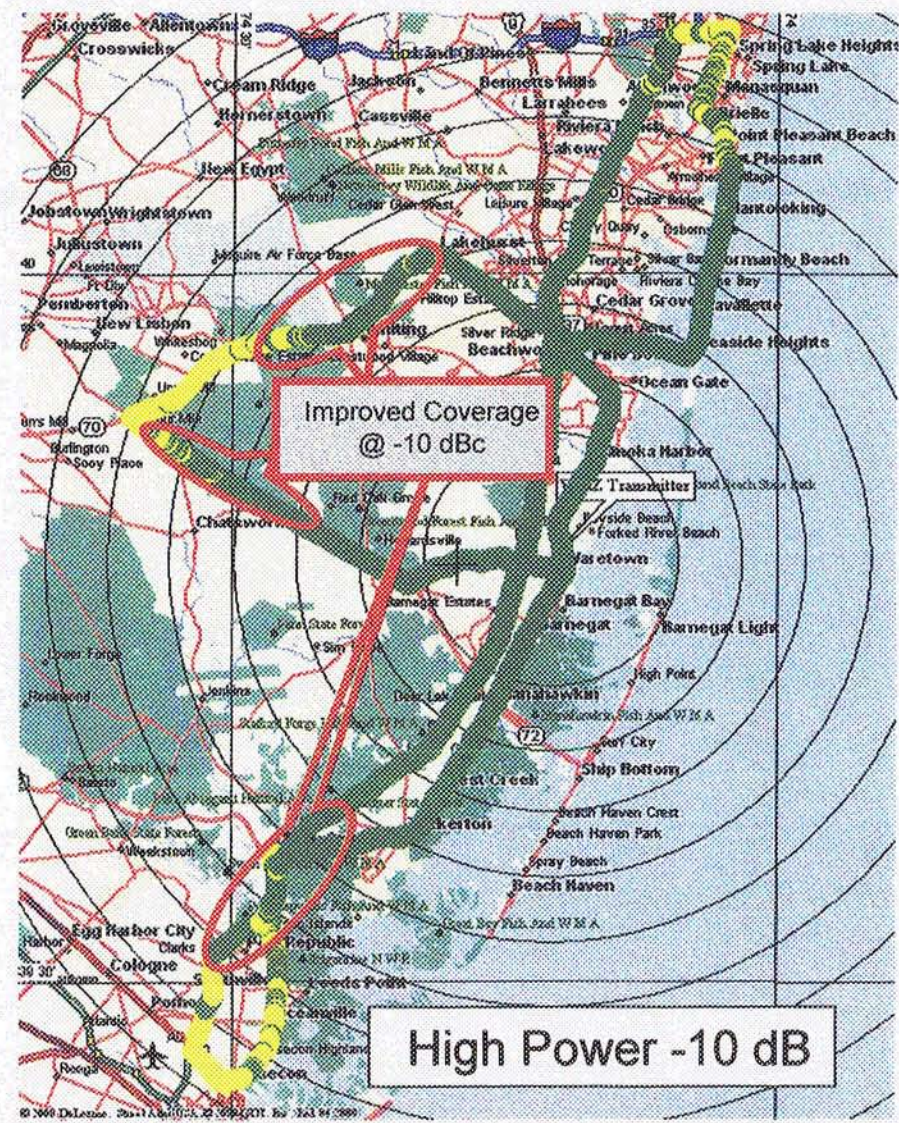
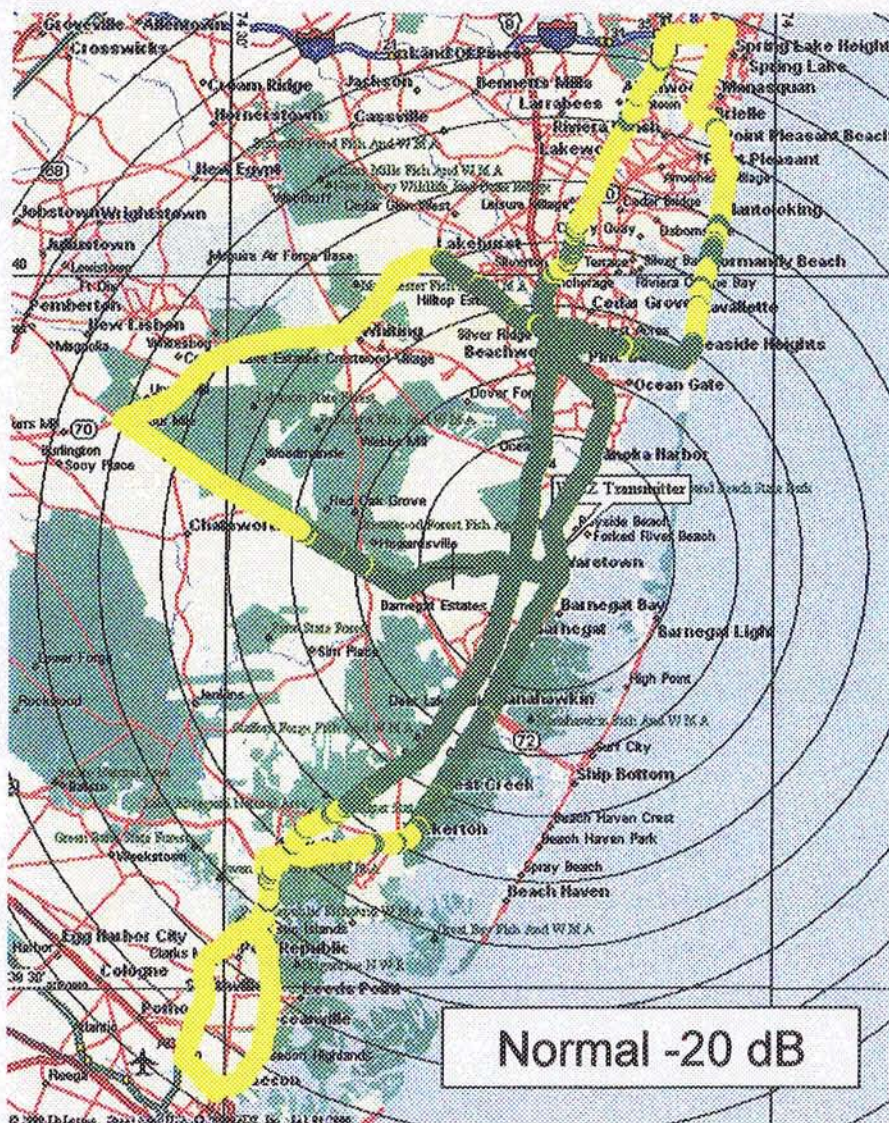
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# Digital Coverage Improvement

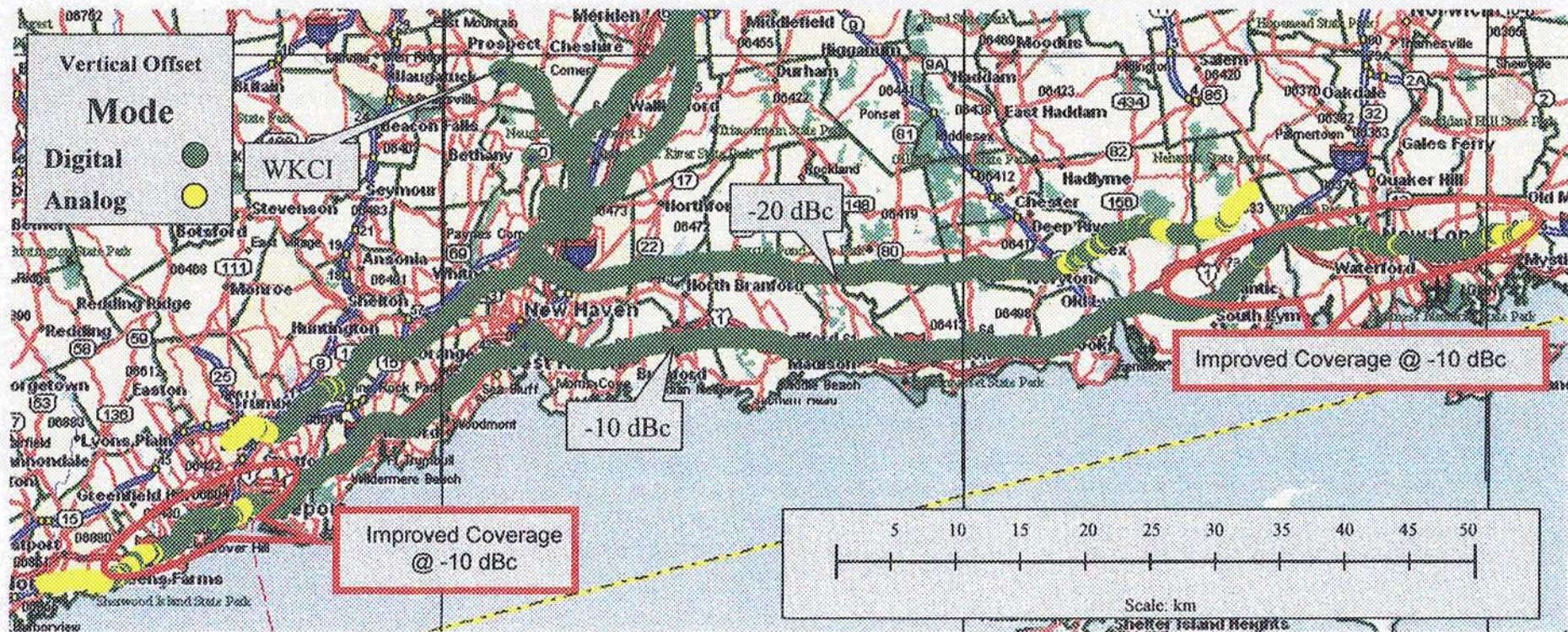


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# Coverage – WJRZ Class A FM



## Coverage – WKCI Class B FM



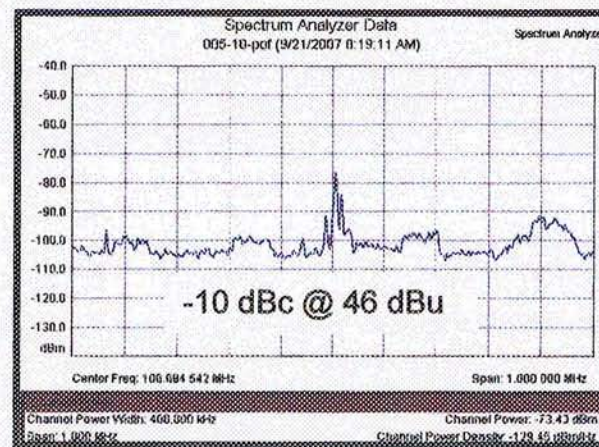
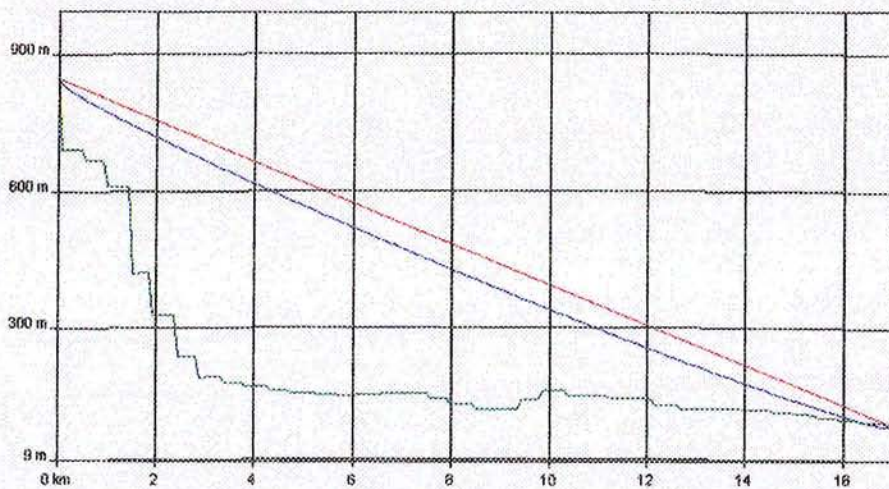
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# Building Penetration



ComStudy 2 Path Profile



# Compatibility

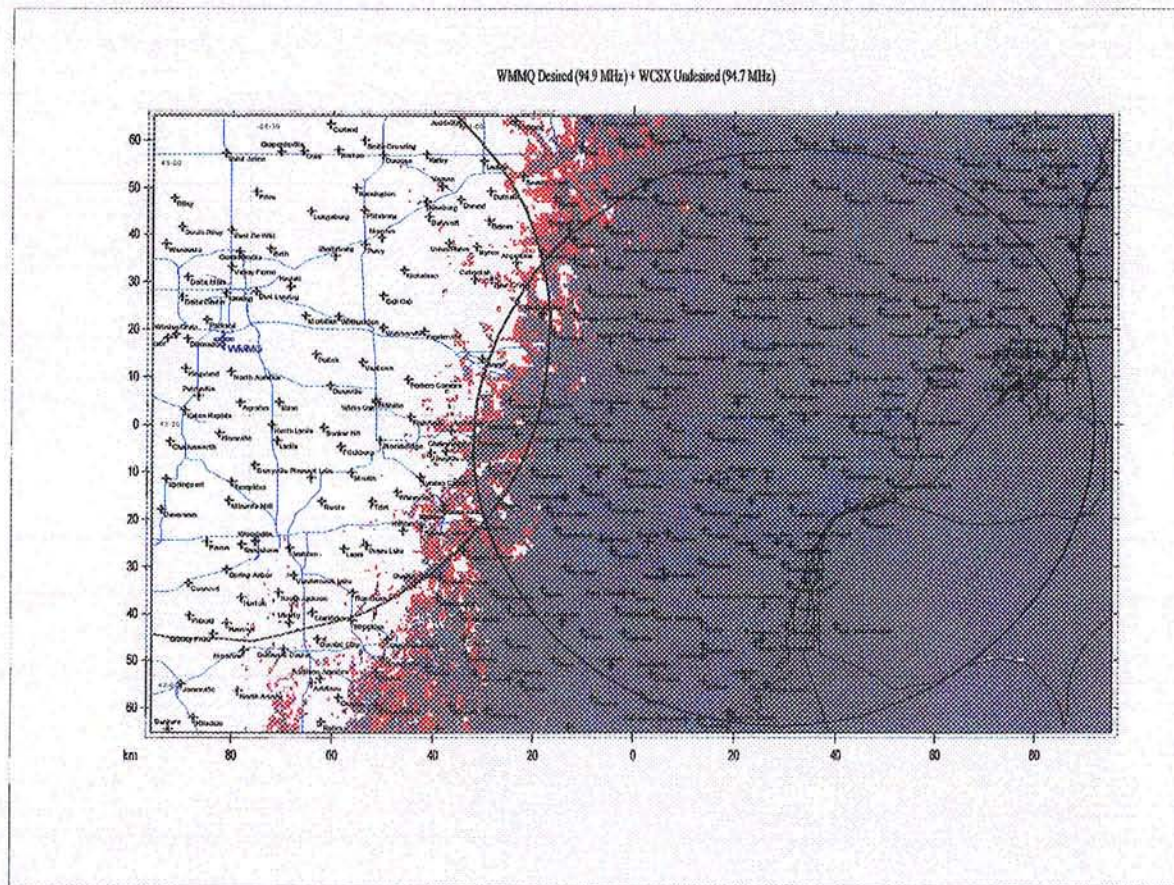


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## Compatibility – Testing Structure

### □ Test Structure:

- Compatibility at the edge of coverage (+6dB D/U)
- Compatibility outside the edge of coverage (0 dB D/U)



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# Subjective Evaluation



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## Conditions Used in Subjective Testing

Condition	Host	1 <sup>st</sup> Adjacent
"B" to "B"	WKCI	WWBB and WCBS
"B" to "B" Short Spaced	WCSX	WXKR
"Super B" to "B"	KOST	KSCF
"Super B" to "Super B"	KOST	KVYB

In each condition, audio recordings were made of 1<sup>st</sup> adjacent analog audio signals over six commercially available radio receivers representing typical market segments.

## Demographic Breakdown

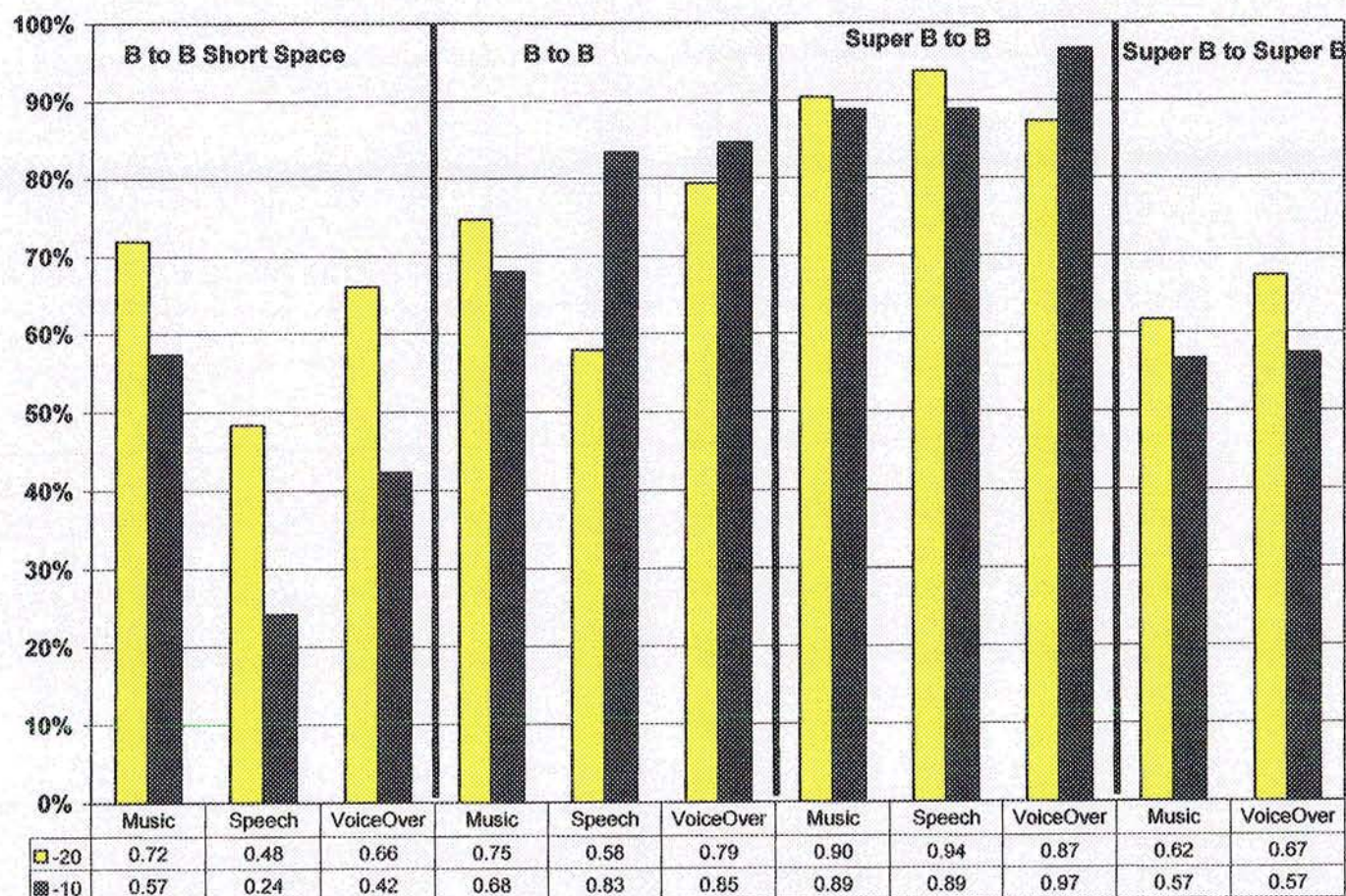
	Male	Female
<b>18-29</b>	<b>11</b>	<b>10</b>
<b>30-32</b>	<b>10</b>	<b>10</b>
<b>40-49</b>	<b>9</b>	<b>9</b>
<b>50+</b>	<b>10</b>	<b>11</b>

Forty-six female and forty-two male consumers were individually tested. Participants ranged in age from 18-70 years, and were recruited from both Salisbury University and the local community. Of the 88 consumers tested, 8 did not pass the screening test. Therefore only 80 participants were included in the final results.



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# Results



Results indicate that raising the digital power ratio from -20 dBc to -10 dBc does not affect listeners' opinions of 1<sup>st</sup> adjacent analog audio in most interference scenarios.



## Results

- ☐ In the majority of conditions, participants listening on 1st adjacent channel analog stations did not report hearing differences when digital power was increased from -20dBc to -10dBc
- ☐ At the protected contour (+6dB D/U) in the short spaced station scenario, listeners rated audio lower at -10dBc than at -20dBc. Thus, it is possible that the increase in adjacent channel digital power may potentially impact the analog broadcast.
- ☐ Outside the protected contour (+0dB D/U) in the Super B to B scenario, listeners rated audio lower at -10dBc than at -20dBc signaling a potential impact on the analog broadcast.
- ☐ Speech is the genre most likely to show differences between -10 and -20dBc.



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## Conclusions

### ☐ Digital Performance

- ☐ An increase of 25 - 33% in radial coverage (regardless of station class) in non-terrain limited environments
- ☐ Parity between digital and analog coverage
- ☐ Typically overcomes 10 dB building attenuation

### ☐ Analog Compatibility

- ☐ Impact limited to areas outside of the protected contour
- ☐ Area of impact limited to oval shaped region in line between stations
- ☐ Existing thermal and man-made noise masks most interference increase
- ☐ Super B power above -20 dB should be capped at Class limit



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# **Joint Parties Proposal Concerning Increasing Digital FM Power**



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## Joint Parties Proposal

- ☐ Authorize stations to increase FM digital power up to -10 dB below the analog carrier
- ☐ This is not a mandatory increase – stations should be allowed to voluntarily increase power by any amount up to -10 dB
- ☐ The digital power level of Super B stations should be limited to the higher of (i) -20 dB relative to the analog carrier or (ii) at least 10 dB below the maximum analog power authorized for this class of stations as adjusted for height, absent any grandfathered super power.
- ☐ The Commission should establish a procedure to expeditiously investigate and resolve reasonably documented allegations of harmful interference from the power increase.



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# Broadcasters Supporting Joint Parties Proposal

- ☐ American Public Media Group
- ☐ Backyard Broadcasting, LLC
- ☐ Beasley Broadcast Group, Inc.
- ☐ Black Crow Media Group, L.L.C.
- ☐ Bonneville Holding Company
- ☐ Broadcast Electronics, Inc.
- ☐ CBS Radio Inc.
- ☐ Clear Channel Communications
- ☐ Commonwealth Public Broadcasting
- ☐ Cox Radio, Inc.
- ☐ Emmis Communications Corp.
- ☐ Entercom Communications Corp.
- ☐ Greater Media, Inc.
- ☐ Harris Corporation
- ☐ Journal Broadcast Corp.
- ☐ Nautel Maine Inc.
- ☐ NRG Media, LLC
- ☐ Radio One, Inc.
- ☐ WNYC Radio

- The Joint Parties represent 1,184 FM radio stations
- This is nearly 13% of all FM radio stations nationwide



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# NPR Labs - Digital Radio Coverage & Interference Analysis (DRCIA)



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## **iBiquity Comments on DRCIA Conclusions**

**iBiquity agrees with the following conclusions from the DRCIA report:**

- ☐ **Mobile HD Radio coverage at 1% falls short of analog coverage for many stations but would replicate analog coverage at 10%.**
- ☐ **Single frequency networks and synchronous boosters could be important tools.**
- ☐ **Asymmetrical carrier level settings could provide a way to mitigate interference on a case-by-case basis.**

**But we have concerns the report may have overstated analog listening and the impact of digital on existing analog services:**

- ☐ **Do not agree with the conclusion that there is a significant impact to analog listening at the existing 1% carrier power level – years of experience do not support this.**
- ☐ **That this impact will dramatically increase if the carrier power levels are increased to 10% - our studies do not support this.**
- ☐ **The characterization that nearly 25% of listeners are outside of station's protected contours, making them susceptible to loss of analog service – we think the report overstated listening outside the protected contour.**



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## Areas of Concern

- ☐ The report overstates analog receiver sensitivity
- ☐ The report incorrectly assumes uniformity in analog reception
- ☐ The report assumes 100% of stations convert to digital at higher power. This is not realistic in the near term.
- ☐ In some cases, digital performance may exceed analog performance. Conclusion that digital performance always falls short of analog is not correct.
- ☐ Report doesn't consider wide variation in analog receivers – can't assume the entire population in the service area is listening population.
- ☐ The conclusions about the relative coverage of analog and digital over generalize the results that can be obtained with specific receivers.

## Areas of Concern (continued)

- ☐ iBiquity's analysis using ITU-R noise models indicates even at the higher digital power level IBOC interference may be masked by environmental noise at areas of overlapping interference from adjacent channels. This is especially true when you account for indoor listening and signal variability. This does not appear to have been addressed in the report
- ☐ There are a number of issues about the NPR test methodology.
- ☐ Use of Ratings Data to Project Listener Impact – we believe this overstated listening and indicates it is far less than the 24.3% specified in the report
- ☐ Listenership Attributable to Translators – we believe this overstated listening outside the protected contour

# Future Plans



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## **Future Plans**

- ☐ **Commence operation of up to 25 stations at higher power to obtain broader understanding of potential impact of power increase and potential extension of digital coverage**
- ☐ **Request experimental authorization for these activities**
- ☐ **Working with NPR and public radio station community to encourage real world test of higher digital power using noncommercial station**
- ☐ **Encourage the Commission to release the Joint Parties Proposal for public comment to get input on the level of support for increasing digital power**



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